

Remarks

The instant Office Action dated March 4, 2011 again notes an objection to the title of the specification, and the following rejections are maintained: claims 23 and 25 stand rejected under 35 U.S.C. § 102(b) over Gardes (U.S. Patent No. 6,830,970); claims 24 and 26 stand rejected under 35 U.S.C. § 103(a) over the '970 reference in view of Hsuan (U.S. Patent Pub. 2001/0005046); claims 1, 3, 5-8, 10, 20-23, 25 and 27 stand rejected under 35 U.S.C. § 103(a) over Chudzik (U.S. Patent No. 7,030,481) in view of Gambino (U.S. Patent No. 6,025,226); and claim 1 stands rejected under 35 U.S.C. § 103(a) over the '481 and '970 references. Claims 2, 4 and 9 are objected to but would be allowable if rewritten in independent form. In this discussion set forth below, Applicant traverses all rejections and further does not acquiesce to any rejection or averment in the instant Office Action unless Applicant expressly indicates otherwise.

Regarding the objection to the title of the specification, Applicant appreciates Examiner's suggestion, and would respectfully suggest the similar title without claim terminology: Electronic device, assembly and methods of manufacturing an electronic device including a vertical trench capacitor and a vertical interconnect.

Applicant presents new claim 28 which is understood to be in condition for allowance, as claim 28 parallels the subject matter of claim 9 indicated as allowable in the previous Office Action.

Regarding the § 103(a) rejections, Applicant respectfully traverses and requests the withdrawal of the finality of the instant Office Action. In the Examiner's Response to Arguments section, it appears that, at the very least, a newly relied upon reference is presented. Applicant submits the finality is improper as consistent with the circumstances are set forth in § 706.07(a) of the M.P.E.P., which states: Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims, nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p). In view of the newly introduced reference, the finality of the instant Office Action is thus improper.

Specifically, the Examiner cites “commonly owned” U.S. Pat. No 6,221,769 to Dhong et al. (the ‘769 reference) as teaching a method of manufacturing vias or interconnects. While it is unclear if the ‘769 reference is cited to provide motivation or correspondence, it appears that the Examiner is attempting to modify the ‘481 reference with the newly cited ‘769 reference with motivation provided by the ‘226 reference. This reliance upon the ‘769 reference appears to be a new grounds for rejection, which renders the finality of the instant Office Action improper. These new grounds are further improper as the Final Office Action fails to present any explanation of correspondence or motivation, and fails to identify which claim is rejected under the new grounds.

As a result, Applicant requests that the Examiner remove finality of the Office Action to clarify the remarks, or present a proper new grounds for rejection. Further, as discussed in detail subsequently. The Examiner has failed to respond to the Applicant’s arguments regarding motivation. As such, the finality of the Office Action should be withdrawn.

Applicant further traverses the § 103(a) rejections because, as substantially presented previously, the ‘481 reference teaches away from the proposed combination. Consistent with the recent Supreme Court decision, M.P.E.P. § 2143.01 explains the long-standing principle that a § 103 rejection cannot be maintained when the asserted modification undermines either the operation or the purpose of the main (‘481) reference - the rationale being that the prior art teaches away from such a modification. *See KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1742 (2007) (“[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be non-obvious.”). *See also In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984) (A §103 rejection cannot be maintained when the asserted modification undermines purpose of the main reference.). It would not have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of ‘481 reference with the teaching of the ‘226 reference to have a single deposition layer of dielectric material on the first and second sides of the substrate, on the conductive material lining each of the trenches, and on the walls of the vertical interconnect because a single deposition layer eliminates the need for an additional step to pattern the dielectric layer. Applicant fails to see how this modification would be

implemented and/or be useful for the purposes intended by the '481 reference. In this instance, the teaching away in the '481 reference is evidenced in the reference itself, which explicitly teaches away from the combination with the '226 reference as asserted. Specifically, the '481 reference acknowledges the method of manufacture of vertical interconnects as described in the '481 reference but there is no clear way of modifying the structure as proposed. The Office Action's conclusion that an additional step would be eliminated by the combination does not address that the § 103 burden for there to be some logical way to implement such a proposed structure.

The Final Office Action does not appear to address the Applicant's teaching away argument. The Final Office Action states that the argument is not found persuasive because "the ['481 reference] discloses forming the trench capacitors and the interconnect is based on the ease of processing and the thermal budget." Page 13-14 of the Final Office Action. This statement does not appear to address Applicant's traversals regarding the '481 teaching away from the proposed combination (and would remain uncontroverted in the record for the purpose of appeal). It appears that the Examiner may be attempting to cite motivation for the combination, but falls short in addressing the teaching away argument.

Further, the Final Office Action has not specified any articulated reason for the proposed modification as suggested by the references and thus failed to provide proper motivation for the proposed combination. As presented above, the Examiner does not provide any articulated reasoning for the proposed modification, simply stating that the modification is possible. This approach is contrary to the requirements of § 103 and relevant law. *See, e.g., KSR* at 1741 (U.S. 2007) ("A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art."). "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (*In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006) cited with approval in *KSR*). The Office Action lacks any clearly articulated reasoning stating, "a single deposition layer eliminates the need for an additional step to pattern the dielectric layer." Page 11 of the instant Office Action. The Final Office Action fails to provide any

explanation or proof that this modification is possible, only offering a statement that it could be done. Because the Final Office Action lacks any articulated reasoning for the proposed motivation, the rejections must fail.

Applicant further traverses the §§ 102(b) and 103(a) rejections of claims 23-26 because the cited '970 reference lacks correspondence. For example, the asserted reference does not appear to teach the claimed invention "as a whole" including aspects regarding, *e.g.*, the vertical interconnect having walls lined with conductive material, and a single layer of dielectric on the walls of the vertical interconnect. The Office Action does not explain how such correspondence could be present as the rejection is not accompanied by any interpretation or further explanation in this regard. The element of the '970 reference, as identified by the Examiner, as corresponding to the vertical interconnect is also identified as the conductive material 25. The '970 reference does not appear to teach that the conductive material 25 is or even could be arranged with dielectric as claimed. Referring to Col. 3-28-49, the conductive material 25 is deposited on the oxide layer 24, and thus cannot have walls with dielectric thereupon in accordance with the claimed invention. Because any correspondence in the element of the '970 reference identified by the Examiner as corresponding to the vertical interconnect is unclear, it does not appear that the '970 reference can provide correspondence with the instant disclosure. As such, the rejections must fail.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Juergen Krause-Polstorff, of NXP Corporation at (408) 474-9062.

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